

What is claimed is:

1. An isolated polynucleotide encoding a promyostatin polypeptide or a peptide portion thereof, or a polynucleotide complementary thereto.

5           2. The polynucleotide of claim 1, wherein the promyostatin polypeptide is a vertebrate promyostatin polypeptide.

3. The polynucleotide of claim 2, wherein the vertebrate promyostatin polypeptide is a mammalian promyostatin polypeptide.

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4. The polynucleotide of claim 3, wherein the mammalian promyostatin polypeptide is selected from

a human promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 2;

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a murine promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 4;

a rat promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 6;

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a baboon promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 10;

a bovine promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 12;

a porcine promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 14; and

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an ovine promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 16.

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5. The polynucleotide of claim 2, wherein the vertebrate promyostatin polypeptide is an avian promyostatin polypeptide.

6. The polynucleotide of claim 5, wherein the avian promyostatin polypeptide is selected from

a chicken promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 8; and

5 a turkey promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 18.

7. The polynucleotide of claim 2, wherein the vertebrate promyostatin polypeptide is a piscine promyostatin polypeptide.

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8. The polynucleotide of claim 7, wherein the piscine promyostatin polypeptide is selected from

a zebrafish promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 20;

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a salmon allele 1 promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 27; and

a salmon allele 2 promyostatin polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 29.

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9. A vector, comprising a polynucleotide of claim 1.

10. The vector of claim 9, wherein said vector is an expression vector.

11. A host cell containing a polynucleotide of claim 1.

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12. The host cell of claim 11, wherein said polynucleotide is in a vector.

13. An oligonucleotide, comprising at least about 15 nucleotides that specifically hybridize to a polynucleotide encoding a promyostatin polypeptide or a peptide portion thereof, or to a polynucleotide complementary thereto.

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14. The oligonucleotide of claim 13, wherein said promyostatin polypeptide or a peptide portion thereof is selected from SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 12, SEQ ID NO: 14, SEQ ID NO: 16, SEQ ID NO: 18, SEQ ID NO 20, SEQ ID NO: 27 and SEQ ID NO: 29.

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15. The oligonucleotide of claim 13, wherein said polynucleotide encoding promyostatin polypeptide or a peptide portion thereof is selected from SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 9, SEQ ID NO: 11, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 17, SEQ ID NO 19, SEQ ID NO: 26 and  
10 SEQ ID NO: 28.

16. The oligonucleotide of claim 13, wherein said oligonucleotide is an antisense nucleic acid molecule.

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17. A vector, comprising an oligonucleotide of claim 13.

18. A host cell containing the vector of claim 17.

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19. An isolated polynucleotide encoding a mature myostatin peptide, or a polynucleotide complementary thereto.

20. The polynucleotide of claim 19, wherein the myostatin peptide is a vertebrate myostatin peptide.

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21. The polynucleotide of claim 20, wherein the vertebrate myostatin peptide is a mammalian myostatin peptide.

22. The polynucleotide of claim 21, wherein the mammalian myostatin peptide comprises an amino acid sequence selected from

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amino acid residues about 267 to 374 as set forth in SEQ ID NO: 2;  
amino acid residues about 268 to 375 as set forth in SEQ ID NO: 4;  
amino acid residues about 268 to 375 as set forth in SEQ ID NO: 6;

amino acid residues about 267 to 374 as set forth in SEQ ID NO: 10;  
amino acid residues about 267 to 374 as set forth in SEQ ID NO: 12;  
amino acid residues about 267 to 374 as set forth in SEQ ID NO: 14;  
and  
5 amino acid residues about 267 to 374 as set forth in SEQ ID NO: 16.

23. The polynucleotide of claim 20, wherein the vertebrate myostatin peptide is an avian myostatin peptide.

10 24. The polynucleotide of claim 23, wherein the avian myostatin peptide comprises an amino acid sequence selected from  
amino acid residues about 267 to 374 as set forth in SEQ ID NO: 8;  
and  
amino acid residues about 267 to 374 as set forth in SEQ ID NO: 18.

15 25. The polynucleotide of claim 20, wherein the vertebrate myostatin peptide is a piscine myostatin peptide.

20 26. The polynucleotide of claim 25, wherein the piscine myostatin peptide comprises an amino acid sequence selected from  
amino acid residues about 267 to 374 as set forth in SEQ ID NO: 20;  
amino acid residues about 49 to 157 of SEQ ID NO: 27; and  
amino acid residues about 28 to 136 of SEQ ID NO: 29.

25 27. A vector, comprising a polynucleotide of claim 19.

28. The vector of claim 27, wherein said vector is a viral vector.

29. A host cell containing the vector of claim 27.